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Socio Economic Status- and Gender-based Differences in Students' Perceptions of E-Learning Systems

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ABSTRACT

Many universities are pushing for an increase in on-line course offerings to offset the rising cost of providing high quality educational opportunities and to better serve their student populations. However, enrollments in online courses are not always sufficient to offset their own costs. One possible way of improving enrollments is through marketing campaigns targeted to specific demographic groups. In this study, we extend prior research on online learning by investigating how students' perceptions of e-learning systems, prior to their enrollment in an online course, vary across socio-economic status and gender. Findings suggest that working-class students perceive e-learning systems more positively than their middle-class peers, but that little difference exists between genders. Armed with this knowledge, universities may improve online course enrollments by marketing online courses specifically to working-class students or through campaigns aimed at improving middle-class students' perceptions of e-learning systems.

Keywords

Online learning, e-learning systems, SES, gender, student perceptions

INTRODUCTION

Universities around the country are adding online learning programs to meet the needs of the growing number of students seeking the convenience of online courses and to remain competitive in the rapidly changing market for educational services. The term "on-line learning" covers a broad spectrum of pedagogical tools and approaches that continue to evolve to meet the needs of students and educators. For instance, early online courses were largely instructor-driven and employed unidirectional, asynchronous communication technologies. However, more recent e-learning systems, such as Blackboard, Desire2Learn and Moodle, permit interactive, discussion-driven online courses and multidirectional, synchronous communication by integrating a variety of functionalities including content hosting, email, chat rooms and discussion boards, and grade books into a single, convenient interface (Klobas and Renzi, 2000). These functions enable instructors to offer a wide range of e-learning environments from pure-play courses offered entirely online to blended courses that incorporate aspects of online content delivery into traditional classroom settings.

However, in spite of these technological advances, developing curricula, training faculty and purchasing the necessary technological infrastructure to implement online learning programs is often more costly than many institutions expect (Smith and Mitry, 2008). Further, online courses are often the last to fill or run below capacity as many students prefer to take more traditional, face-to-face courses. Low enrollments in these courses may make recovering these initial investments more challenging.

One way for universities to improve enrollments may be through tailored marketing campaigns directed at those students who stand to benefit from taking online courses but who have thus far been hesitant to do so. Such tailoring requires a keen understanding of the wants and needs of different market segments and their perceptions of online learning. Some questions that may lead to better marketing efforts are: (1) Which demographic groups are best served by online courses?; (2) How do

students' perceptions of online courses, in general, vary by individual demographic characteristics?; and (3) How do student's perceptions of the technologies used to support online courses vary across different demographic groups?

Prior research has investigated differences between demographic groups as determined by gender, major, year in school, etc., in online learning environments and in doing so, offer some answers for the first of these questions. However, one demographic characteristic that has not been well-studied, with regards to on-line learning, is socio-economic status (SES). This is a surprising omission given that the ratio of working-class students to middle / upper class students on college campuses has been increasing for some time (Markel and Frone, 1998). The second of these questions has also received some attention in the literature, though most studies of demographic-based differences in perceptions of online learning have focused on post-course outcome variables, such as student success and student satisfaction with online courses, rather than the perceptions students hold about online courses and technologies prior to taking an online class. Our review of the literature revealed no studies that address question 3 even though students' perceptions of the technologies used to support online courses may well influence their decisions to enroll in their first online course. In this study, we contribute to the literature by investigating the role two demographic characteristics play in the formation of students' perceptions' of e-learning systems. In doing so we hope to provide a better understanding of how students make the decision to take, or not to take, online courses.

The remainder of the paper is organized as follows. The first section briefly reviews the literature on online learning and on students' perceptions of online courses and web-based technologies and then develops the study's hypotheses. In the second section we describe our experimental design and analysis. Next we discuss the limitations and implications of our study. The final section reviews the contributions of the paper.

THEORETICAL DEVELOPMENT

Although the evolution of online learning technologies has broadened the range of methods available to instructors for delivering courses, online and traditional face-to-face courses are still viewed as offering very different learning environments. For example, online courses offer greater flexibility and convenience than traditional classes, and studies suggest that students may be more comfortable in initiating contact with their instructors in online courses, even to the point of being aggressive (Rea, White, McHaney and Sanchez, 2000). Yet, communication within online courses has been typified as lacking the "richness, spontaneity and synergy of face-to-face communication" (Aggarwal and Bento, 2000: 12). This disparity between experience and perception may exist because the communication within online courses is sufficiently different from that in traditional courses that some students require training in email or chat room etiquette in order to communicate effectively (Howland and Moore, 2002; Kemery, 2000). Online courses may also be more time consuming for many instructors in terms of preparation of course materials, in attaining technology skills, and in managing students' expectations of constant instructor availability by email or other means (Robinson and Yu Borkowski, 2000). Students must also gain proficiency with the technologies used and comfort with the methods of online instruction before they can be successful in these courses (Kemery, 2000; Robinson and Yu Borkowski, 2000).

Students themselves are aware that differences between online and traditional classes exist and their perceptions of these differences vary across different student groups (Aggarwal and Bento, 2000; Rea, et al., 2000; Tanner, Noser and Totaro, 2009). These differences are a concern to educators as perceptions and attitudes greatly influence students' motivation and ability to learn as well as their comfort with online learning (Howland and Moore, 2002; Koohang and Durante, 2003; Smart and Cappel, 2006). One suggested cause for differences in students' perceptions of online learning are differences in individual characteristics such as gender, Internet experience, major, first language, year in college, learning style and age (Barakzai and Fraser, 2005; Smart and Cappel, 2006; Tanner, Noser, Fuselier and Totaro 2004; Tanner et. al., 2009). Although the results vary across the courses and technologies assessed, there appears to be an agreement across these studies that individual characteristics can and do play a role in students' perceptions of online learning. This is not surprising as research suggests that student characteristics influence perceptions of traditional classroom experiences as well (Tinto, 2006).

One such individual characteristic, socio-economic status (SES), is a rapidly changing demographic in today's colleges and universities. According to Markel and Frone (1998), a large proportion of college students today are employed part or full time. Moreover, they are often employed at low-wage and non-professional jobs. Although all working adults experience challenges in balancing the varying levels of work and family conflict (Eby, Casper, Lockwood, Bordeaux, and Brinley, 2005), members of the working-class, who often work at low-wage jobs, are likely to experience greater conflict than workers in higher-wage jobs. This may occur because those in the working-class may work multiple jobs or face more family responsibilities, resulting in greater overall conflict. Greater conflict may also result from working-class individuals attempts to rise up the socio-economic ladder through education. This type of conflict, described as work to school conflict,

can have a negative impact on school-related performance outcomes (Butler, 2007). In recognition of these demands facing working-class students, many universities are reaching out to this underserved community by offering more flexible degree programs and online courses. These programs are likely to incorporate e-learning systems because these systems provide technological infrastructure necessary for working-class students to take online courses from work or home and access course content on a schedule that fits their lifestyle (Kemery, 2000). Thus, the convenience created by e-learning systems is likely to be greater value to working-class students than to their middle-class counterparts who possess more slack time and resources to devote to scholastic endeavors. Therefore, we suggest that prior to taking an online course, working-class students will perceive e-learning systems more favorably than middle-class students.

H1: Prior to ever taking an online class, working-class subjects will have more positive views of e-learning systems than middle-class subjects.

In addition to SES, we also investigate gender differences in perceptions of e-learning systems. Results of prior studies on gender effects in perceptions and satisfaction with online learning are mixed; some finding no differences between genders (Hill and Chidambaram, 2000; Koohang and Durante, 2003; Smart, K. and Cappel, 2006) and others finding that gender does play a role in students' perceptions of online courses (Tanner et. al., 2009; Womble, 2008). Gender differences have been found in subjects' attitudes and use of computers and online technologies. Studies suggest, for example, that males are more comfortable and interested in computers in general and possess a greater-self efficacy and experience in Internet use than females (Reinen and Plomp. 1997; Schumacher and Morahan-Martin, 2001; Torkzadeh and Van Dyke, 2002). However, many of these same studies found that attitudes toward technology and actual use skills did not vary between genders and that the differences that do exist appear to be lessening over time (Hargittai, and Shafer, 2006; Schumacher and Morahan-Martin, 2001).

Meanwhile, research that looks specifically individuals' perceptions of web-based technologies, such as email, has found significant and persistent differences between males and females. Specifically, this research suggests that females may perceive a higher degree of social presence in online contexts (Gefen and Straub, 1997; Richardson and Swan, 2003) and are more positively influenced by information presented by web-based technologies (Venkatsubramanyan and Hill; 2009). Greater social presence is often viewed as a positive feature of a technology. Therefore, if females possess similar initial attitudes towards web-based technologies as males but also attribute greater social presence and influence to online technologies and information than do males, there is reason to believe that females will also hold more positive views of e-learning systems than do males.

H2: Prior to ever taking an online class, female subjects will have more positive views of e-learning systems than male subjects.

The next section we describe the experiment designed to test the above hypotheses and the subsequent data analysis.

METHODOLOGY AND ANALYSIS

Our experimental design involved upper division business students who completed an online survey containing questions regarding socio-economic status (SES), gender, computer use experience and perceptions of e-learning systems. SES was measured by self-report. Students were asked to indicate their socio-economic status by selecting one of the following options: working-class, middle-class, middle to upper class and upper class. Of the 44 subjects, 24 described themselves as working-class and 20 selected middle-class. None of the subjects described themselves as middle to upper or upper-class. The sample included 27 males and 17 females. Subjects were also asked to indicate their use of a variety of software programs and activities (e.g. "posting a on a public forum" and "posting a photo on facebook"). Their responses to these items were used as a measure of computer use experience and used as a control variable in all analyses. All students in the sample reported using Blackboard in support of their face-to-face courses, and thus were aware of e-learning systems in general, but none had ever enrolled in an online course that depended heavily upon an e-learning system for class interaction, instruction, and delivery of course content.

Survey items were drawn from a 17-item survey assessing student satisfaction with e-learning systems (Wang, 2003). In order to capture the perceptions of e-learning systems students possess prior to taking an online course, the following prompt was provided to subjects:

“You may have some familiarity with e-learning systems through your other classes. Please think about the kinds of e-learning systems (software and programs) that might be used in an on-line class while you answer the following questions.”

Subjects were then asked to rate their agreement with statements using seven-point Likert-type scale, with anchors of “strongly disagree,” “disagree,” “somewhat disagree,” “neither agree nor disagree,” “somewhat agree,” “agree,” and “strongly agree.” Responses were recorded as values from 1 (strongly disagree) to 7 (strongly agree). After examining subjects’ overall expectations of online courses, we examined their perceptions of learning systems. Specifically, we examined different subscales of the measure: perceptions of user control (Cronbach’s alpha = .88); ease of using learning systems (Cronbach’s alpha = .90); quality of the content provided by learning systems (Cronbach’s alpha = .90); perceptions of user-friendliness (Cronbach’s alpha = .87); content available on learning systems (Cronbach’s alpha = .85).

Below, Table 1 provides the basic descriptive statistics for subjects’ responses by socio-economic status while Table 2 illustrates the items within each of the subscales, as well as the results of the comparisons of means, using Analysis of Covariance (ANCOVA), between self-reported working-class and middle-class subjects.

Scale	SES	Mean	Std. Deviation
User Control	Working-class	5.027	1.39031
	Middle-class	4.017	1.64317
Ease of Use	Working-class	4.9833	1.31865
	Middle-class	4.1143	1.33052
Content Quality	Working-class	5.1458	1.29572
	Middle-class	5.0119	1.05023
User Friendliness	Working-class	5.0972	1.22565
	Middle-class	4.3810	1.46168
Content Available	Working-class	5.2716	.8917
	Middle-class	5.2549	1.10258

Table 1. Means and Standard Deviation by SES

The descriptive statistics presented in Table 1 reveal that, on average, both working-class and middle-class students perceive e-learning systems somewhat positively; the means for all scales were greater than 4.0 (neither agree nor disagree) and many were greater than 5.0 (somewhat agree). As can be seen in Table 2 below, SES does not influence students’ perceptions of the content that e-learning systems are believed to provide. Neither perceptions of the type of content nor of content quality differed significantly between students of different socio-economic statuses. However, supporting our hypothesis, working-class and middle-class subjects did differ in their perceptions of the ease of using e-learning systems. Working-class students view e-learning systems more positively than middle-class students in terms of granting users control over the content they want and their learning progress, ease of use and user friendliness.

Scale	α	Items	F	df	Sig. (2-tailed)	Mean Diff.
User Control	.88	1. E-learning systems enable you to choose what you want to learn 2. E-learning systems enable you to control your learning progress	4.96	42	.031**	1.01
Ease of Use	.90	3. E-learning systems make it easy for you to discuss questions with your teachers 4. E-learning systems make it easy for you to discuss questions with the other students 5. E-learning systems are easy to use 6. E-learning systems make it easy for you to find the content you need 7. E-learning systems make it easy for you to share what you learn with the learning community	4.48	42	.04**	.87
Content Quality	.90	8. E-learning systems provide content that exactly fits your needs 9. E-learning systems provide sufficient content 10. The content provided by e-learning systems is easy to understand 11. E-learning systems provide useful content	.107	42	.745	.13
User Friendliness	.87	12. E-learning systems are user-friendly 13. The operation of e-learning systems is stable 14. E-learning systems make it easy for you to access the shared content from the learning community	2.99	42	.09*	.24
Content Available	.85	15. E-learning systems provide up-to-date content 16. E-learning systems enable you to learn the content you need 17. E-learning systems record your learning progress and performance	.14	42	.71	.09

Table 2: SES differences in pre-conceived views of e-learning systems

** indicates significance at the $p \leq .05$ level; * indicates significance at the $p \leq .10$ level

Specifically, these findings suggest that working-class subjects believe that e-learning systems make it easy for students to interact with each other, with their instructors, and with the course learning community more so than middle-class students. One explanation for this finding is that working-class students are often employed and therefore may have difficulty meeting their classmates and instructors in traditional college level courses. E-learning systems provide an additional, more temporally flexible means of communicating that enables working-class students to interact easily with others involved in the course. Similarly, e-learning systems enable students to access course content any time and from any location with Internet access. This gives students more control over their learning experience, enabling them to gather the materials they need and study when they have time to do so. For more traditional, middle-class students, this additional flexibility and control may be less important as they possess more time devote to their studies than do working-class students. Working-class students also view e-learning systems more favorably in terms of user-friendliness again perhaps because of the value these students place upon the convenience of their learning experience. Thus our study finds some support for hypothesis 1 (H1) that working-class students view e-learning systems more positively than middle-class students.

In addition to SES, we also examined the effects of gender on students' perceptions of these technologies. Tables 3 and 4 below present the descriptive statistics and results of a comparison of preconceived views of e-learning systems between male and female subjects, controlling for SES and computer use experience.

Scale	SES	Mean	Std. Deviation
User Control	Male	4.1852	1.58811
	Female	5.0588	1.47778
Ease of Use	Male	4.3778	1.21571
	Female	4.7765	1.57303
Content Quality	Male	5.0741	1.03500
	Female	5.0735	1.43278
User Friendliness	Male	4.6790	1.32524
	Female	4.8235	1.49126
Content Available	Male	5.2716	.89173
	Female	5.2549	1.10258

Table 3. Means and Standard Deviations by Gender

Scale	F	Df	Sig. (2-tailed)	Mean Difference
User Control	3.80	40	.06*	.87
Ease of Use	1.11	40	.297	.40
Content Quality	.001	40	.977	.00
User Friendliness	.125	40	.725	.15
Content Available	.000	40	.986	.02

Table 4: Gender differences in pre-conceived views of e-learning systems

**** indicates significance at the $p \leq .05$ level; * indicates significance at the $p \leq .10$ level**

In Table 3 we see that both genders, on average, view e-learning systems somewhat positively with females viewing several factors slightly more positively than males. As Table 4 illustrates however, we find no significant differences between males and females on four of the five scales. Of particular interest is the similarity of scores between the genders for Ease of Use as this factor includes items related to interactions with fellow students and the instructor. It appears that in this case, females do not attribute greater levels of social presence to e-learning systems than males as they do for other web-based modes of communication. In fact it seems that neither gender sees or values the ability of these systems to foster communication between class participants.

From Table 4 we also see that there is some difference in how males and females view e-learning systems in terms of User Control. This finding suggests that females perceive e-learning systems as providing more control in their learning progress and over the materials they wish to learn than do males. This suggests some support for hypothesis 2 (H2) but contradicts prior research that proposes that males possess greater self-efficacy, and are more comfortable with online technologies, than are females. Based on these studies, one might infer that males would therefore feel a greater sense of control over e-learning systems than females (Hargittai and Shafer, 2006; Schumacher and Morahan-Martin, 2001). One explanation for our finding may be that males attribute feelings of control to their own experience and knowledge and thus feel somewhat limited by the structure imposed by e-learning systems. If females do possess less self-efficacy than males then they may instead attribute feelings of control to the technology and see it as a benefit of e-learning systems. This may be good news for universities seeking to increase the number of females enrolled in their online courses as marketing efforts aimed females may be used to highlight the benefits of online courses and e-learning systems rather than on dispelling any fears they may have of technologies used to support online courses. However, many universities may find this one difference alone insufficient cause to target marketing specifically to one gender or the other.

DISCUSSION

The results of our study have practical implications. Our findings suggest that working-class students do hold more positive views of e-learning systems prior to enrolling in their first online course than do middle-class students. This suggests two potential strategies for improving enrollments in online courses. The first of these is to capitalize on working-class students' positive views of e-learning systems by directing marketing efforts towards increasing their awareness of current or future online learning opportunities or expanding the number of online course offerings that accommodate working-class students' schedules. For example, experiences at our own university suggest that synchronous online courses offered during the lunch hour are quite popular with working-class students.

A second approach would be to use marketing campaigns to improve middle-class students' perceptions of e-learning systems. By dispelling middle-class students' less favorable perceptions of these technologies and highlighting their benefits, universities may be able to increase the appeal of online courses to this student demographic. There are implications too in the minimal differences in perceptions of e-learning systems between males and females as this suggests that universities need not tailor their campaigns to one gender in particular but rather should focus their efforts on improving the perceptions of e-learning systems in other demographics.

It is important to note that the generalizability of our findings is limited by our sample, both in terms of its size and in its sole inclusion of upper division business students. Our understanding of students' perceptions of e-learning systems could be expanded with studies that employ larger, more diverse samples and with further investigations of the roles demographic characteristics play in the formation of these perceptions.

CONCLUSION

Many universities are looking for new ways to support the educational goals of their diverse student populations. Although online courses technologies have enabled schools to accommodate a wider range of students, online learning programs are costly to develop and support. Unfortunately, some universities have been forced to scale back their online course offerings due to these high costs and to insufficient demand. Our study suggests that universities may do well to target their marketing efforts at working-class students as this demographic already holds more positive views of e-learning systems than do middle-class students. Offering more classes at times that help working-class students balance their family, work, and school demands, such lunch hour courses, may further increase these students' interest in taking online courses. Meanwhile, increasing enrollments of middle-class students may entail educating this group on the benefits offered by both online courses and the technologies used to support them. Our study contributes to the literature on online learning in two main ways. First, our study goes beyond the traditional outcome variables of student success and satisfaction with online learning to examine students' perceptions of e-learning systems prior to their enrollment in an online course. In doing so, we gain a better understanding of factors that may influence students' willingness to enroll in online courses. Second, by identifying differences in these perceptions between working-class and middle-class students, we illustrate the importance of including this little studied demographic in future studies of online learning. It is our hope that this study will encourage other researchers to investigate SES and additional individual characteristics that may influence students' perceptions of both e-learning systems and online learning in general.

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